1909MNRAS..69..434C

These three values are quite inconsistent with theory, unless there is some defect in the values derived by astronomers from the theory of gravitation. It is possible that the values obtained by Professor Newcomb and Professor Brown may not be quite complete, but it seems very doubtful that they could be as much as half a second too small.

Natal Observatory:
1909 *February* 3.

Note on Mr. Nevill's paper on the Data employed in Oppolzer's Canon der Finsternisse. By P. H. Cowell, M.A., F.R.S.

In the *Monthly Notices*, vol. lxvi. p. 404, Mr. Nevill examines four different sets of formulæ, and on p. 415 he arrives at the conclusion that they represent ancient eclipses about equally well, and that therefore there is no observational ground for preferring one set of formulæ to any other of the four. At that time he believed the fourth set of formulæ to be mine, and he thought that he had shown three other sets to be equally good. Mr. Fotheringham has, however, pointed out that Mr. Nevill's calculations were based on a misconception of Oppolzer's meaning, and Mr. Nevill now admits that the four sets of formulæ that he examined are different from what he supposed, and in particular that the fourth set is not mine. Assuming the accuracy of his arithmetic, he has therefore demonstrated that four sets of formulæ that have nothing to do with me represent ancient eclipses equally well, or perhaps we should say equally badly. Mr. Fotheringham's researches have presented Mr. Nevill with another set of formulæ different from mine, and coming up to a certain standard in satisfying ancient records; and as he has now four sets instead of three (not mine), he considers that his conclusion is strengthened.

It should be noticed, however, that he tacitly assumes that my formulæ do not satisfy the records any better than his four different sets; and as, by his own admission, he has not examined my formulæ at all, I am at a loss to account for this assumption. In the absence of any figures of his own, I beg of him to look at mine, and to notice that, according to my calculations, my formulæ bring the centres of the Sun and Moon to within 50″ of each other for the eclipses of − 1062, − 762, − 648, − 602, − 584, − 430, − 309 (besides others after the beginning of the Christian era), and that therefore the residuals according to my formulæ are about one-third as large as the residuals according to any of his four sets.

I can assure him that my conclusions would never have been put forward if my residuals had really been as large as he supposed them to be when he wrote his paper of 1906 May.

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1909MNRAS..69..434C

On a Chinese Planisphere. By E. B. Knobel.

(Plates 17, 18.)

There was exhibited in the Science Section of the Franco-British Exhibition, by the Royal Scottish Museum, a bronze instrument described in the catalogue as "A Bronze Compass 13½ inches diameter, taken from a Japanese Junk, with raised dots in centre said to represent Stars"; a further label stated that it was believed to represent all the stars visible in Japan.

The instrument is undoubtedly Chinese, and is a planisphere of the heavens, on which the stars are indicated according to the Chinese constellations.

Original Chinese planispheres, whether on metal or paper, are extremely rare. Nothing of the sort is found at the British Museum, though it is possible that some maps of the stars may hereafter be discovered in the collection of Chinese books and manuscripts. The only sources of information known to me are—

(1) *Atlas Celeste Chinoise*, by P. Grimaldi, Soc. Jesu, printed in China, 1711. In these maps the Chinese asterisms are engraved on maps of Tycho Brahe's stars.

(2) The maps of De Guignes in vol. x. of the *Mémoires de l'Académie présentés par divers Savants*, 1785, in which the Chinese asterisms are engraved on the stellar maps of De la Hire.

(3) Williams' work, *Chinese Observations of Comets*, 1871, wherein he gives Chinese stellar maps copied from a Chinese work in the library of University College, London; and

(4) Schlegel's *Uranographie Chinoise*, which is a very exhaustive work on the subject, and must always be considered of the highest value.

All the above, however, are probably from sources subsequent to the Jesuit expedition to China in the 17th. century. In many cases the planisphere in question differs from these texts; and, for the above reasons, I think it may be interesting to offer to the Society some description of the instrument.*

The planisphere or map of the heavens is about 9½ inches diameter. It is a quasi-polar equidistant projection of the sphere, but extended to about 50° south of the equator. The stars are indicated by raised dots, which are linked together according to the usual method with the Chinese, each group of stars so united forming one of their numerous asterisms.

In studying the planisphere it should be remembered that there is no connection whatever between Chinese constellations and those with which we are familiar in Europe, though some well-known groups of stars, like Charles's Wain in Ursa Major, the Pleiades and Hyades in Taurus, and the principal stars in Orion and Corvus form definite Chinese asterisms.

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* The Society formerly possessed several Chinese planispheres, as appears from a list published in the 15th volume of the *Monthly Notices*, but these have all disappeared and cannot be found.

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